STABILITY OF 2-VARIFOLDS WITH SQUARE INTEGRABLE MEAN CURVATURES

Speaker: Yuchen Bi

Peking University

Time: Thur, Apr. 25th, 10:30 - 11: 30

Venue: Room 106, SCMS

Abstract: Allard’s regularity theorem proves that an n-dimensional integral varifold whose mass ratio is close to 1 in a given ball and has generalized mean curvature in L^p with p>n is in fact a C^{1,\alpha} graph at a slightly smaller scale. It is long known in the literature (since the pioneering works of Toro and M\"uller-Sverak in the nineties) that, for a 2-dimensional surface, an L^2 control of the whole second fundamental form allows for bi-Lipschitz parametrization. Inspired by Toro and M\"uller-Sverak’s work, we obtain an extension of Allard (when p=n=2) showing that (when the mass ratio is sufficiently small), the varifold is (at a slightly smaller scale) bi-Lipschitz homeomorphic to a disk. Moreover, for an integral 2-varifold V=\underline{v}(\Sigma,\theta_{\ge 1})$ in $\mathbf{R}^n$ with generalized mean curvature $H\in L^2$ such that $\mu(\mathbf{R}^n)=4\pi$ and $\int_{\Sigma}|H|^2d\mu\leq 16\pi(1+\delta^2)$, we show that Σ is W^{2,2} close to the standard embedding of the round sphere in a quantitative way.